B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

PRE BOARD-II EXAM : 2025-26
ARTIFICIAL INTELLIGENCE (417)

Class: X (SET 02) **Time : 2 Hrs.**
Date: 15-12-2025 **Max Marks: 50**
Admission No. : …..…… **Roll No. :**

General Instructions:

1. *Please read the instructions carefully.*
2. *This Question Paper consists of 21 questions in two sections : Section A & Section B.*
3. *Section A has Objective type questions whereas Section B contains Subjective type questions.*
4. *Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.*
5. *All questions of a particular section must be attempted in the correct order.*
6. ***SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):***
   - i. *This section has 05 question.*
   - ii. *Marks allotted are mentioned against question/part.*
   - iii. *There is no negative marking.*
   - iv. *Do as per the instructions given.*
7. ***SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):***
   - i. *This section has 16 questions.*
   - ii. *A candidate has to do 10 questions.*
   - iii. *Do as per the instructions given.*
   - iv. *Marks allotted are mentioned against each question/part.*

MARKING SCHEME

SECTION A: OBJECTIVE TYPE QUESTIONS

Q.(1) Answer any 4 out of the given 6 questions on Employability Skills. **(4 x 1 = 4)**

(i) **(b)** Understanding inner strength, hidden talents, skills and weaknesses
(ii) **(c)** Patient
(iii) **(d)** Time
(iv) **(d)** Minimizing waste and pollution
(v) **(c)** .jpg
(vi) **(d)** Both (a) and (c)

Q.(2) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) **(b)** Healthcare and life sciences
(ii) Job loss / unemployment *(Machines replacing human workers)*

(iii) **Training data / large amounts of data**
(iv) **(b)** Problem scoping and developing a vision
(v) **False**
(vi) **(d)** Data generation

Q.(3) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) **(b)** Precision
(ii) **(b)** Credit card fraud
(iii) **(b)** Actual
(iv) **(d)** Recommendation systems
(v) **(c)** CNN
(vi) **(b)** Unlabelled dataset

Q.(4) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) **(b)** Video and image data
(ii) **(b)** White
(iii) **(c)** Train-test split
(iv) **False**
(v) **(c)** False Negative
(vi) **(c)** Both (a) and (b)

Q.(5) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) **(b)** Syntactic Analysis
(ii) **(c)** Machine learning and deep learning
(iii) **Chat Assistant / Virtual Assistant / Conversational Agent**
(iv) **(b)** To help machines understand and use human language
(v) **(b)** Term Frequency and Inverse Document Frequency
(vi) **(c)** The image looks more detailed and closer to the original

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills. **(3 x 2 = 6)**
Answer each question in 20-30 words.

Q6. Differentiate between wage-employed people and self-employed people.

Answer:
Wage-employed people work under an employer and receive a fixed salary for their services. Self-employed people run their own business or profession, take risks, manage operations independently, and earn profits.

Q7. Write and explain any four stress-management techniques.

Answer:
Deep breathing relaxes the mind, exercise releases stress-relieving hormones, time management reduces workload pressure, and meditation improves focus and emotional balance, helping individuals stay calm and handle stressful situations effectively.

Q8. Explain any four 7C's of effective communication.

Answer:
Clarity ensures the message is easy to understand. **Conciseness** avoids unnecessary words. **Correctness** prevents errors. **Courtesy** maintains politeness. These 7Cs improve message impact and avoid misunderstanding.

Q9. Two advantages of using Kulhads.

Answer:
Kulhads are eco-friendly, biodegradable, and help reduce plastic waste. They naturally enhance the taste of beverages and support traditional potters by promoting local handmade products.

Q10. Precautions to protect a computer from viruses (any 4).

Answer:
Use updated antivirus software, avoid downloading from unknown websites, regularly install system updates, and do not open suspicious email attachments or USB devices from untrusted sources.

Answer any 4 out of the given 6 questions in 20-30 words each. (4 x 2 = 8)

Q11. What is classification in Computer Vision? Explain.

Answer:
Classification in Computer Vision refers to identifying the category of an image. The model analyzes features and assigns labels such as cat, dog, car, or handwritten digits based on learned patterns.

Q12. What is regression? Give two examples.

Answer:
Regression predicts continuous numerical outputs. Examples include predicting house prices based on features and forecasting sales revenue using past data to estimate future business performance.

Q13. Explain the 4W Problem Canvas used in the AI project cycle.

Answer:
4W includes: **Who** faces the problem, **What** the issue is, **Where** it occurs, and **Why** it is important. It helps define AI project objectives clearly and meaningfully.

Q14. Ethical concerns in model evaluation.

Answer:
Unfair datasets may create biased results. Privacy issues arise if sensitive data is misused. Misleading accuracy metrics can hide errors. Ethical evaluation ensures fairness, transparency, and safety.

Q15. Write and explain any two applications of NLP.

Answer:
Chatbots communicate with users using human language. **Sentiment analysis** identifies emotions in customer reviews or social media posts. Both help in automation and better decision-making.

Q16. Full form of CNN and how it processes data.

Answer:
CNN stands for **Convolutional Neural Network**. It processes data using convolution layers for feature extraction, pooling layers for size reduction, and fully-connected layers to produce final classification results.

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Answer any 3 out of the given 5 questions in 50-80 words each. **(3 x 4 = 12)**

Q17. What is a Neural Network? Explain its three layers.

Answer:
A neural network is a computer system inspired by the human brain that learns patterns from data. The **input layer** receives raw information. **Hidden layers** process data using weighted connections and extract meaningful features. The **output layer** gives the final prediction or classification. These layers work together to solve tasks such as image recognition, language translation, and medical diagnosis.

Q18. Explain the five stages of NLP.

Answer:
NLP includes **Lexical Analysis** (breaking text into words), **Syntactic Analysis** (checking grammar structure), **Semantic Analysis** (deriving meaning), **Pragmatic Analysis** (understanding context), and **Discourse Integration** (linking sentences). These stages allow machines to understand human language accurately for tasks like translation, chatbots, and text classification.

Q19. Confusion matrix + precision, recall, F1-score.

Answer:
Confusion Matrix:
TP = 120, FP = 20, TN = 800, FN = 60
Precision = 120 / (120 + 20) = **0.857**
Recall = 120 / (120 + 60) = **0.667**
F1-Score = 2 × (0.857 × 0.667) / (0.857 + 0.667) ≈ **0.75**
These metrics evaluate model performance in correctly detecting disease cases and avoiding incorrect predictions.

Q20.

Answer:

1. Sector-Based Framework

A sector-based ethical framework focuses on making AI ethical guidelines specific to different industries or sectors.
Different sectors have different risks, needs, and rules. Therefore, the ethical principles for AI in each sector are customized.

2.

A rights-based framework ensures that AI systems protect and respect human rights.
It focuses on fairness, dignity, equality, and freedom.

3.

This framework is based on the idea of **maximizing overall benefit and minimizing harm**.
AI decisions are judged ethical if they create the greatest good for the greatest number of people.

4.

A virtue-based framework focuses on the character and moral values of the people who design, develop, and use AI.

Q21.

Answer:
Artificial Intelligence (AI) is the broad field that enables machines to think and act like humans. Machine Learning (ML) is a subset of AI where algorithms learn patterns from data. Deep Learning (DL) is a subset of ML that uses multi-layer neural networks for complex tasks like facial recognition.

********** ALL THE BEST **********